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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/679,668	10/05/2000	Gary Mark Crosbie	200-1136	7069

7590 05/09/2002  
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EXAMINER
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MACK, COREY D

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 05/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/679,668

Applicant(s)

CROSBIE ET AL.

Examiner

Corey D. Mack

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 12-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 recites the limitation "said insulating substrate" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.
3. Claims 13 and 14 recite the limitation "said first resistor" in lines 1-2. It is unclear from where this limitation is based.
4. Claim 15 recites the limitation "said first and second resistors" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.
5. Claim 16 recites the limitation "said first and second resistors" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1-8, 10-11 and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al. (US 6,134,960) in view of Morimasa et al. (US 5,804,720). Yamakawa et al. (US 6,134,960) disclose in Fig. 1-14 a gaseous flow sensor 17 comprising a substrate 1 formed of an electrically insulating material (silicon) (Claims 1, 10, 11, 16 and 17); a reference resistor 6a, 6b formed on the substrate and disposed in a gaseous flow at an ambient temperature without heating (Claim 1, 10, 11 and 17); a flow-sensing resistor 4, 5 formed on the substrate and disposed in the gaseous flow heated to a temperature higher than the ambient temperature, wherein the reference resistor and the flow-sensing resistor are formed of a resistive material (The Examiner notes that the reference discloses that the flow-sensing resistors are made of heat-sensitive material, such as platinum. Platinum is only given as an example and other heat-sensitive materials may be used) (column 8, lines 31-43) (Claims 1, 10, 11 and 17); an electrical circuit in electrical communication 13a-h and 14a-h with the reference resistor and the flow-sensing resistor (See Fig. 5) (Claims 1, 10, 11 and 17); the reference resistor is formed in a serpentine configuration (Claims 6 and 13); reference resistor is formed in a serpentine configuration having vertical portions connected by horizontal portions with an aspect ratio of length/width of the resistor being at least 2 (Claims 7 and 14); the electrical circuit maintains a target temperature differential between the reference resistor and the flow-sensing resistor by controlling an electrical current flowing to the flow-sensing resistor (column 11, lines 46-61) (Claim 8); and, printing the flow-sensing resistor to a thickness between about 4 micrometers and about 50 micrometers (column 8, lines 44-53) (Claim 20). However, Yamakawa et al. (US 6,134,960) do not explicitly disclose a resistor formed of a *specific* non-platinum material; an oxide composition of Pb, Ru, Si and Bi (known); a reference resistor has an electrical resistance

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at least 15 times the electrical resistance of the flow-sensing resistor; reference resistor and the flow-sensing resistor each has a thickness between about 2 micrometers and about 30 micrometers; reference resistor and the flow-sensing resistor each has a thickness preferably between about 5 micrometers and about 20 micrometers; the reference resistor is formed in a spiral configuration (known); printing the reference resistor to a thickness between about 4 micrometer and about 50 micrometers; forming the reference resistor and the flow-sensing resistor in the same printing process; nor, do they explicitly disclose firing the reference resistor and the flow-sensing resistor after the printing step (known).

Morimasa et al. (US 5,804,720) disclose in Fig. 1-15 a resistor formed of aluminum (column 4, lines 40-41) (Claims 1, 10, 11 and 17); and, forming the reference resistor 8 and the flow-sensing resistor 9, 10 in the same process (column 3, line 60 – column 4, line 4 and column 4, lines 36-49) (Claim 18). The specific resistor thickness ranges, relative resistance and composition have been optimized through *experimental use* and are within the knowledge of one of ordinary skill in the art. In re Aller, 220 F.2d 454, 456 105 USPQ 233, 235 (CCPA 1955). (Claims 2, 3, 4, 5, 11, 15, 19 and 20). Morimasa et al. (US 5,804,720) do not disclose firing the reference resistor and the flow-sensing resistor after the printing step. The cited references teach depositing the reference resistor by vapor deposition, sputtering or the like process. However, it was commonly known by those of ordinary skill in the art that resistors could be formed by thick film printing and then fired (Claim 21). Therefore, at the time the invention was made, it would have been obvious to one skilled in the art to include in Yamakawa et al. (US 6,134,960) the teachings of Morimasa et al. (US 5,804,720) for the purpose of resistively measuring flow rate.

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8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al. (US 6,134,960) in view of Morimasa et al. (US 5,804,720) as applied to claims 1-8, 10-11 and 13-21 above, and further in view of Wienand et al. (US 6,079,265). Yamakawa et al. (US 6,134,960) as modified by Morimasa et al. (US 5,804,720) disclose the invention as claimed, except they do not explicitly disclose an insulating substrate formed of a ceramic material. However, Wienand et al. (US 6,079,265) disclose in Fig. 1-6c a gaseous flow sensor formed on a ceramic substrate 6 (Claim 12). Therefore, at the time the invention was made, it would have been obvious to one skilled in the art to include in Yamakawa et al. (US 6,134,960) as modified by Morimasa et al. (US 5,804,720) the teachings of Wienand et al. (US 6,079,265) for the stated purpose of quickly registering mass flow.

#### *Response to Arguments*

9. Applicant's arguments filed 07 February 2002 have been fully considered but they are not persuasive. Applicants' arguments with respect to claims 1-8 and 10-21 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey D. Mack whose telephone number is (703) 305-3424. The examiner can normally be reached on M-F, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-0956 for regular communications and (703) 308-1782 for After Final communications.

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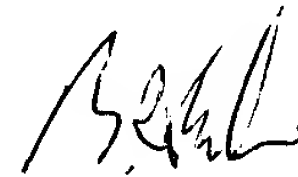
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

CDM

Corey D. Mack, Esq.  
Patent Examiner  
Art Unit 2855

May 5, 2002



Benjamin B. Fuller  
Supervisory Patent Examiner  
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